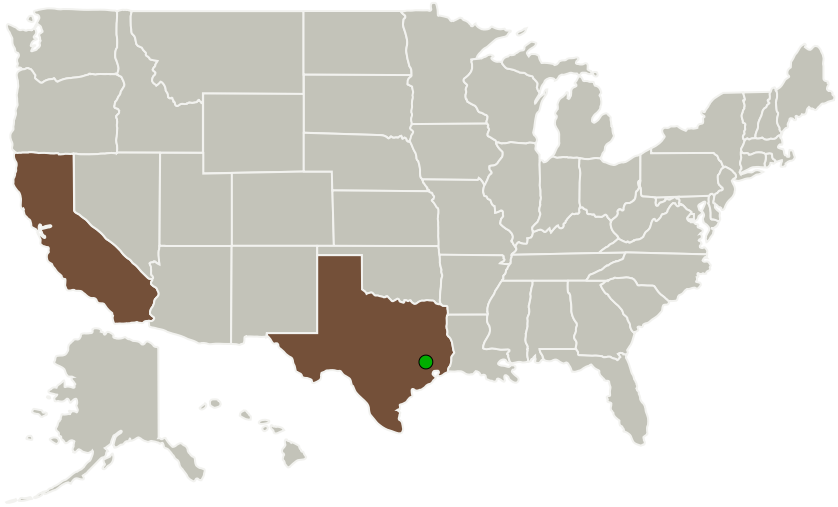
Multi-Modal Neurodiagnostic Tool for Stress Monitoring, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

NASA has a requirement for a neurodiagnostic tool that can be used to monitor the behavioral health of the crew during long duration Exploration missions. The device should unobtrusively monitor and detect neurophysiological markers of stress that could lead to behavioral or performance deterioration. The neurodiagnostic monitor should be lightweight and compact and should require minimal time or effort for the crew to use. Among the various neurodiagnostic modalities, electroencephalography (EEG) and functional near infrared spectroscopy (fNIRS) are most amenable for integration into a lightweight, wearable system that can be adapted for use in Space. We will demonstrate the feasibility of a wearable multi-modality neurophysiological device for monitoring stress. The wearable monitoring system will provide a real-time functional imaging of cortical activity while the crew performs Exploration mission activities.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Linea Research Corporation	Lead Organization	Industry	Palo Alto, California
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

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Primary U.S. Work Locations	
California	Texas

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140670)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Linea Research Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

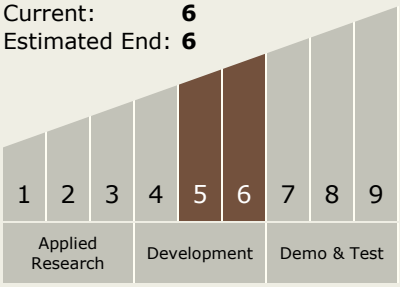
Carlos Torrez

Principal Investigator:

Yongjin Lee

Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.3 Behavioral Health and Performance

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System